Innolume GmbH
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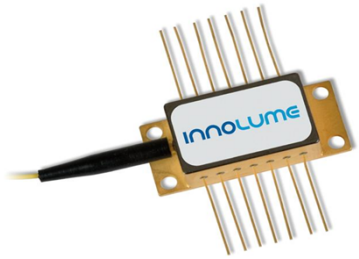
LD-10XX-FBG-400

Fiber Bragg Grating wavelength locked High Power Laser Diode



Features:

- FBG wavelength stabilized
- 400mW output power ex-single mode fiber
- Available wavelength range 1000-1130nm
- Proprietary mirror coating technology enabling high reliability
- Polarization maitaining PM980 fiber
- Individual burn-in and thermal cycling screening
- RoHS compliance

SPECIFICATIONS

Test conditions: CW operation, chip temperature 25°C, the case is mounted on room temperature heatsink

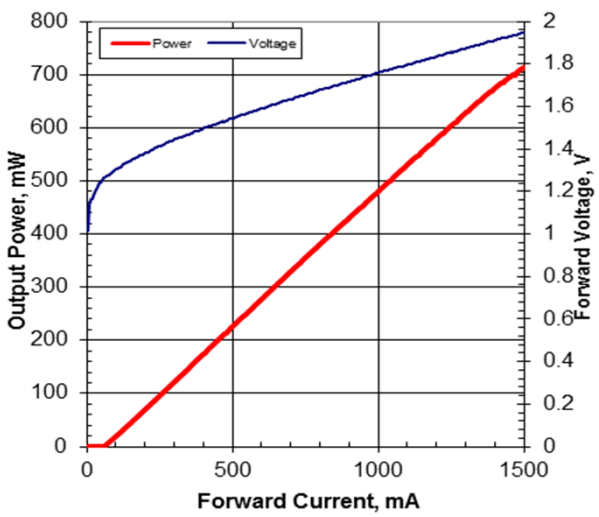
Parameters	Symb.	Min.	Typ.	Max.	Unit
Operating output power	Pout	400			mW
Kink-free* output power		1.1×Pout	1.3×Pout		mW
Range of available wavelength	λ	1000		1130	nm
Mean wavelength tolerance		λ - 2		λ + 2	nm
Spectral width @ -3dB level at Pout	Δλ			0.100	nm
Threshold current	Ith		80	100	mA
Wavelength shift with FBG temperature	Δλ/ΔT fbg		9	12	pm/°C
Distance from chip to FBG	D	80			cm
Recommended operating temperature	Top	20	25	40	°C
Operating current at Pout	Iop		800	1000	mA
Forward voltage at Pout	Vf		1.6	1.8	V
Polarization Extinction Ratio **	PER	12			dB
Polarization Extinction Ratio ***	PER	15			dB

* ΔP/ΔI > 0 (ΔI=5mA)
** 1000-1050nm range
*** 1050-1130nm range

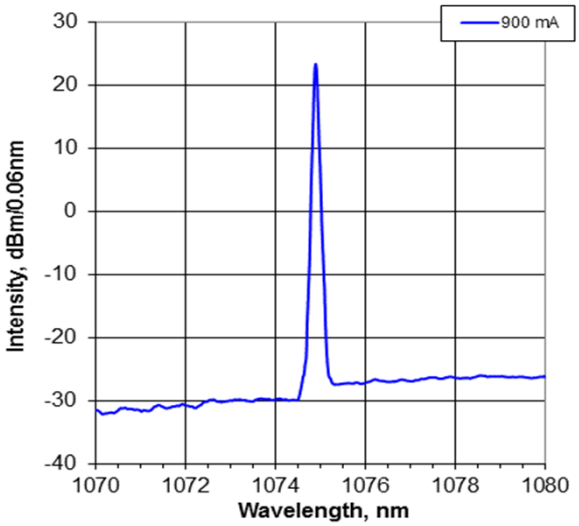
TYPICAL PERFORMANCE for reference only*

Test conditions: CW operation, chip temperature 25°C, the case is mounted on room temperature heatsink

Light-Current-Voltage Characteristics



Spectral Characteristics



* Performance is given for the 1075nm device. Similar performance is expected for the other wavelengths in the 1000-1130nm range.

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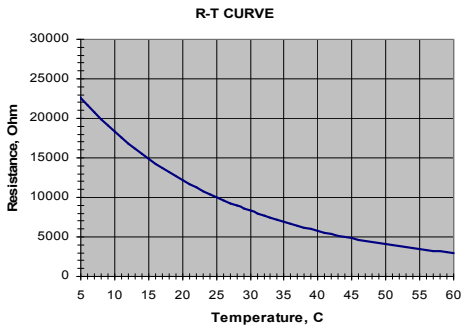
ABSOLUTE MAXIMUM RATINGS

Parameters	Min.	Max.	Unit
Laser Diode reverse voltage	-	2	V
Laser Diode CW forward current	-	Iop+300	mA
Thermo Electric Cooler current	-	3	A
Thermo Electric Cooler voltage	-	4	V
Fiber bend radius	3	-	cm
Chip operating temperature range	5	40	°C
Case operating temperature range	0	70	°C
FBG operating temperature range	-40	120	°C
Storage temperature range	-40	85	°C

THERMISTOR SPECIFICATION

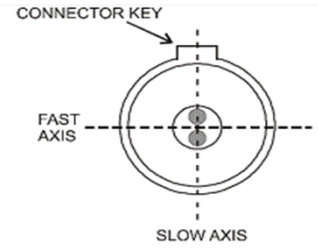
Parameters	Value	Unit
Thermistor type	NTC	-
Resistance @25°C	10 ± 0.1	kOhm
Beta 0-50°C	3375±1%	K



FIBER SPECIFICATION

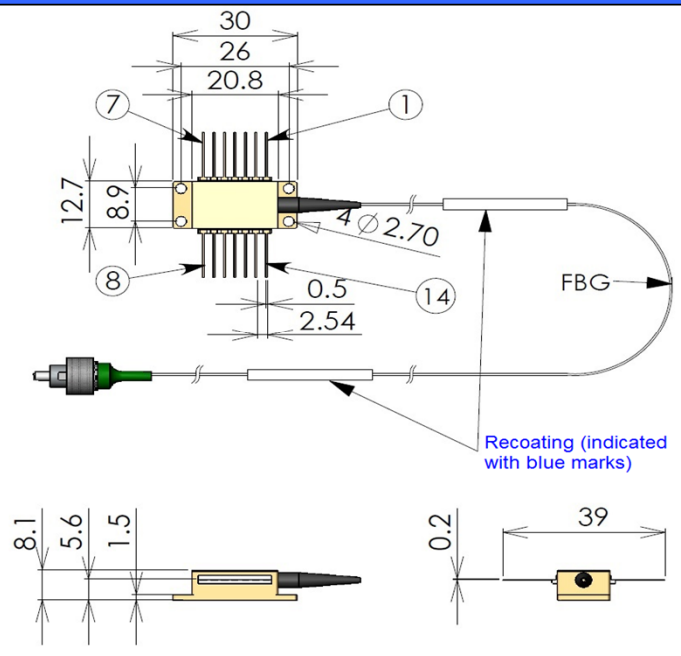
Parameters	N/A	PM980	Unit
Numerical aperture (Typical)	n/a	0.12	
Cutoff wavelength	n/a	900±70	nm
Mode-field diameter (@1060nm)	n/a	6.6±0.3	μm
Cladding diameter	n/a	125±1	μm
Coating diameter	n/a	245±15	μm
Length	n/a	1.8±0.3	m
Connector	FC/APC (narrow key)		

Connector alignment to the PANDA fiber



The output light is polarized along the slow axis of PM fiber.

DIMENSIONS (in mm)



Pin identification:

1	TEC "+"
2	Thermistor
3	Monitor PD anode (opt.)
4	Monitor PD cathode (opt.)
5	Thermistor
6	-
7	-
8	-
9	-
10	Laser Diode anode "+"
11	Laser Diode cathode "-"
12	-
13	Case
14	TEC "-"

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SAFETY AND OPERATING INSTRUCTIONS

The light emitted from this device is invisible and can be harmful to the human eye. Avoid looking directly into the fiber connector when the device is in operation. Proper laser safety eyewear must be worn during operation with open connector.

Absolute Maximum Ratings may be applied to the Laser Diode for short period of time only. Exposure to maximum ratings for extended period of time or exposure to more than one maximum rating may cause damage or affect the reliability of the device. Operating the Laser Diode outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the component must be employed such that the maximum forward current cannot be exceeded.

A proper heatsink for the Laser Diode on thermal radiator is required. The Laser Diode must be mounted on radiator with 4 screws (bolt down in X-style fashion with initial torque set to 0.075Nm and final X-style bolt down at 0.15Nm) or with clamps. The deviation from flatness of radiator surface must be less than 0.05mm. It's recommended using of Indium foil or thermal conductive and soft material between bottom of the case and heatsink for thermal interface. It's undesirable to use thermal grease for this.

Avoid back reflection to the Laser Diode. It may give impact on the device performance in aspects of spectrum and power stability. It also may cause fatal laser diode facet damage. Using of optical isolators is highly recommended to block back reflection.

Do not pull the fiber. Do not bend a fiber with a radius smaller than 3 cm. Operate the laser module with clean fiber connector only. Periodically check and clean the connector if necessary. To clean the connector use a clean-room compatible tissue only, put some Isopropyl alcohol onto it and carefully clean the facet of the connector, or use special fiber cleaning tools. Perform cleaning only with the laser current switched off.

Electrostatic discharge can lead to device failure. Take necessary precautions to prevent ESD.

Example of Part Number Identification

LD-1064-FBG-400 -> 400mW output power at mean wavelength 1064nm

LD-1122-FBG-400 -> 400mW output power at mean wavelength 1122nm

NOTE: Innolume product specifications are subject to change without notice